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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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DENNISON, SCHULTZ, DOUGHERTY & MACDONALD  
1727 KING STREET  
SUITE 105  
ALEXANDRIA, VA 22314

EXAMINER

AFTERGUT, JEFF H

ART UNIT PAPER NUMBER

1733

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/725,453	<b>Applicant(s)</b> EBERT ET AL.	
	<b>Examiner</b> Jeff H. Aftergut	<b>Art Unit</b> 1733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-32, 34-46 and 48-59 is/are pending in the application.
- 4a) Of the above claim(s) 52-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-32, 34-46, 48-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Election/Restrictions***

1. Newly submitted claims 52-59 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 52-59 relate to an article of manufacture as opposed to a method of manufacturing an article. It should be noted that there is no requirement in the article of manufacture that the fiber perform be disposed in a mold for shaping and/or curing therein. One skilled in the art could thus form the grid of the article via a different method where the perform was formed from preimpregnated fibers and the assembly was placed in an oven to cure the resin therein without the use of a mold.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 52-59 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 24-32, 34-46, and 48-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable

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one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention..

Applicant is referred to the Office action dated April 7, 2005, paragraph 2 for a complete discussion of this rejection. The following comments are supplemental to the previously made rejection and are made in response to the remarks made by applicant and the reference submitted to Mattheij et al. the applicant is advised that it is now better understood what is meant by "tailored fiber placement" and the associated stitching involved in such an operation. The applicant is advised, however, that it is not understood how one can maintain constant volume and constant fiber thickness throughout the entire grid as the nodes would have had twice the thickness as well as twice the fiber volume as the points between the nodes as previously explained when utilizing continuous fibers. There simply is not an adequate written description of the same in the original disclosure. It should be noted that the specification does describe the use of tailored fiber placement to form the perform but it does not provide any discussion as to how one utilized tailored fiber placement to achieve constant fiber volume and constant thickness. In other words there is no description of the patterning necessary to achieve constant fiber volume and constant fiber thickness with a tailored fiber placement operation. Such would not have been readily determinable on its face. Moreover, the applicant is advised that the specification described:

"The performs are produced in particular by tailored fiber placement (RFP) technology. In this, fiber material unwound from a spool is laid and joined with sewing thread in such a way that a perform of desired geometry is available; different material thicknesses can be attained by stitching repeated layers on top of one another." (page 4, liens 18-23, emphasis added)

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There is not enough information given as to how one employed the stitching operation of Mattheij et al (tailored fiber placement) to obtain a perform having constant thickness. It is not clear from the description identified above whether the "layers" are additional stitching thread or additional continuous fibers. If it is an additional layer of continuous fibers, then when one reached the nodal points one would have had to sever the continuous threads. If it were additional stitching thread between the nodes then it would not provide adequate reinforcement in the direction of the reinforcing fibers. It should be noted that tailored fiber placement as defined by Mattheij et al (and as taken to be what applicant is doing) typically only uses 1-4% stitching thread to hold down the continuous fibers on the base. As such, those regions which were not nodal points would have at least 2-8 % more fiber volume if one made a second pass over the same with the tailored fiber placement device. Note that no second pass is expressly described and the use of a second pass would require the severing and/or cutting of the threads once one reached the nodal point which applicant appears to state was not performed because continuous fibers were used to make the grid and the disadvantage of the prior art was that the fibers were water jet cut at the nodes. It should be noted that applicant argues that there is no stitching thread disposed at the nodes, however, the applicant's own specification states that there is stitching at the nodes, see page 5, lines 17-21:

"By the production methods known per se, a perform is made that can have a grid shape; as a result of the laying of the reinforcing fibers and stitching them at the intersection points, a material thickness that is equivalent to the thickness between the intersection points is attainable." (emphasis added)

Accordingly, applicant has failed to explain how tailored fiber placement was utilized to obtain a perform wherein at the cross over points (nodes) of the grid so formed there was equal fiber volume and equal fiber thickness. Applicant is referred to the previous Office action for a complete discussion of the figures submitted and the manner in which applicant asserted that the fibers were placed.

Applicant is additionally advised that it appears that "tailored fiber placement" as described in the article submitted by applicant to Mattheij et al requires the use of a base fabric or structure into which one stitched to hold the fibers in their desired local to make the specified grid arrangement. The applicant is advised that there is no disclosure as originally filed relating to the use of the base fabric into which one apparently stitched to hold the fibers in place. Additionally, it is not known what happens to the same in the mold. It is unclear whether this base fabric becomes part of the finished assembly or not, but if one was employing "tailored fiber placement" it would appear that as some point in the process one would have had to remove and/or sever the base fabric from the grid formed upon the same. The exact nature of such processing is not known and is not described at all in the specification in order to enable one skilled in the art at the time the invention was made to make and/or use the invention. Essentially, the "tailored fiber placement" operation is not described adequately to make it clear how one skilled in the art at the time the application was filed would have employed tailored fiber placement to make the product particularly when tailored fiber placement included the stitching of the fiber onto a base textile which is not described in the original disclosure.

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2. Claims 24-32, 34-46 and 48-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The applicant has added to the claim that the grid is one which is "self supporting", however there is no disclosure as originally filed which expressly states that the grid is "self supporting". Additionally, as described by applicant as well as is described by Mattheij et al, the "tailored fiber placement" operation involved the placement of the reinforcing fibers upon a base via the sewing and/or stitching thread to hold the fibers in place. The grid so formed is therefore not "self supporting" unless one considers the base fabric material to be part of the grid. It should be noted that there is no description of the base fabric in the specification, however one can only ascertain from the disclosure as well as applicant's arguments and the article submitted by Mattheij et al that the processing performed by applicant employed a base fabric material onto which the filaments were placed and secured in position with stitching. As such, the grid itself is not self-supporting as defined but rather requires the support of the base. Additionally, it is not clear what happens to the base fabric in the additional processing performed in the claim.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 24-32, 34-46 and 48-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite that the grid is "self supporting". Applicant states in response to the rejection under 112, first paragraph that the original disclosure clearly defined a finished assembly which was self supporting and that the grid like structures of the disclosure "must be resistant to high temperatures and have high mechanical strength, and that carbon fiber reinforced carbon grates have proven themselves for this purpose". It should be noted that neither of the independent claims requires that formation of a carbon matrix material. In fact, both independent claims merely recite the curing of the polymer material but not the carbonization of the same. Note that dependent claims further define the carbonization of the matrix material. As such, the exact scope of the claim cannot be ascertained. It cannot be determined whether in order to be "self-supporting" within the meaning given to the same by applicant that the resin must be carbonized or whether merely curing the same is sufficient. The applicant is advised that the meaning of the term is not clearly defined in the original disclosure so as to provide sufficient meaning to the term.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 24, 26-31, 38, 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckers et al in view of Kam et al, PCT WO 99/22932 and Koury



further taken with either one of Kawasaki et al or Blad et al '679 further optionally taken with the admitted prior art as exemplified by the article to Matheij et al (entitled "Tailored Fiber Placement-Mechanical Properties and Applications") for the same reasons as expressed in paragraph 5 of the Office action dated August 30, 2005.

7. Claims 25, 32, 34-37 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 6 further taken with Booth for the same reasons as presented in the Office action dated August 30, 2005, paragraph 6.

8. Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 6 further taken with either one of Handermann or Kent et al for the same reasons as presented in paragraph 7 of the Office action dated August 30, 2005.

9. Claims 48 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deckers et al in view of Kam et al, PCT WO 99/22932 and Koury further optionally taken with the admitted prior art as exemplified by the article to Matheij et al (entitled "Tailored Fiber Placement-Mechanical Properties and Applications") for the same reasons as expressed in paragraph 5 of the Office action dated August 30, 2005.

Note that the rejection of claim 48 is essentially the same rejection previously made in the Office action dated August 30, 2005 with the exception that there is no longer a need to provide evidence that those skilled in the art would have desired to incorporate uniformity in both thickness and fiber volume in the grid assembly (which was evidenced in the earlier presented rejection by either one of Kawasaki et al or Blad

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et al '679). The rejection of these claims is essentially the same rejection as previously submitted except that these references are not included as the limitations relating to the uniformity in the grid assembly have been removed from the claim. Applicant is referred to the Office action dated August 30, 2005 as well as March 19, 2004 for greater details of the rejection.

10. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 9 further taken with Booth for the same reasons as expressed previously in paragraph 6 of the Office action dated August 30, 2005.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeff H. Aftergut  
Primary Examiner  
Art Unit 1733

JHA  
April 7, 2005